U.S. Department of Energy (DOE) / National Renewable Energy Laboratory (NREL)

Workshop on Energy Planning Resources for Puerto Rico

Tuesday, March 19, 2019
8:00 a.m. to 5:00 p.m. (AST)
Puerto Rico Energy Bureau, Hearing Room
World Plaza Building
268 Muñoz Rivera Ave, Suite 801
San Juan, Puerto Rico 00918

Friday, March 22, 2019
8:00 a.m. to 5:00 p.m. (AST)
In Partnership with National Institute for Energy and Island Sustainability (INESI)
University of Puerto Rico – Mayaguez (UPRM)
Department of Civil Engineering and Surveying
Mayagüez, Puerto Rico 00682

Purpose

This free, one-day workshop is an opportunity for exchange between energy planners and other stakeholders in Puerto Rico and DOE/NREL staff working on energy transformation in the commonwealth. Learn about a DOE project currently underway, provide input on the status of energy system recovery and needed resources, learn about NREL planning tools, and provide feedback on modifications to address local needs. Optional afternoon sessions will go in-depth on select topics.

Agenda

Morning Session

8:30-9:00 a.m. Welcome and Introductions

9:00-10:15 a.m. Overview and Panel Discussion: Local needs for energy transition capacity-building

Panelists include:

- **San Juan**
  - Gabriel Perez, Regional Manager Caribbean Region, Blue Planet Energy Systems (and ACONER board member)
  - Ingrid M. Vila Biaggi, President/Co-founder, Cambio
  - Lillian Mateo Santos, Associate Commissioner, Puerto Rico Energy Bureau
- **Mayaguez**
  - Ernesto Rivera Suárez, President, Renewable Solutions Engineering, Inc. (and ACONER former president and consultant on energy policy affairs)
  - Ruth Santiago, Lawyer
  - Thomas King, Founding Director, Fundación Borincana

10:15-10:30 a.m. Break

10:30-11:00 a.m. NREL Tools You Can Use: Presentation and group discussion

11:00-11:10 a.m. Oak Ridge National Laboratory tools presentation

11:10-11:20 a.m. Sandia National Laboratories tools presentation

11:20 a.m.-12:00 p.m. Facilitated discussion on data, tool, and training priorities

12:00-12:15 p.m. Report out from discussion

12:15-12:30 p.m. Next Steps

12:30 – 1:30 p.m. Lunch on your own

Concurrent Afternoon Sessions – 1:30-4:30 p.m.

- **Option 1. System Advisor Model (SAM) User Group Session.** SAM is a free computer program that calculates a renewable energy system's hourly energy output over a single year, as well as the cost of energy for a renewable energy project over its lifetime. This three-hour, hands-on session provides an overview of SAM and related tools and solicits feedback from users on needs specific to Puerto Rico. We will also cover the National Solar Radiation Database (NSRDB), PVWatts, Utility Rate Database, Jobs and Economic Development Impacts (JEDI) tool, and other relevant data and tools. Suitable for anyone interested in individual system simulations.
- **Option 2. HEVI and MAFRIT/FESTIV Tools Overview and Discussion.** Learn more about NREL's capacity expansion modeling tool Hawaii Energy Visualization Initiative (HEVI), and the grid modeling tools Multi-Area Frequency Response Integration Tool (MAFRIT) and Flexible Energy Scheduling Tool for Integrating Variable Generation (FESTIV).
- **Option 3. Energy Efficiency Tools and Resources.** Attend this session for a more in-depth discussion on energy efficiency needs in Puerto Rico and available resources.

NREL Tools – user-driven and publicly available

Tool	Questions Answered	Training Available	URL
National Solar Radiation Database (NSRDB)	What is the level of solar irradiance at my site?	User manuals, support forum, and data download steps online	https://nsrdb.nrel.gov/ https://maps.nrel.gov/nsrdb-viewer
Building Energy Optimization Tool (Beopt)	What are cost-optimal efficiency packages for various levels of whole-house energy savings for my building design?	Training videos and publications in support menu on website	https://beopt.nrel.gov/
Community Solar Scenario Tool (CSST)	What are the costs and benefits to various audiences of a single community solar project?	Tool documentation is included as cell comments	https://www.nrel.gov/energy-solutions/csst.html
Jobs and Economic Development Impact (JEDI) models	What are job and other economic development impacts of renewable energy projects in my jurisdiction?	Instructions online and in 'About Jedi' tab in the spreadsheet tool	https://www.nrel.gov/analysis/jedi/about.html
PVWatts	What is the possible performance and annual value of my solar project?	Help button on website provides documentation	https://pvwatts.nrel.gov/
REopt Lite	What combination of solar PV, wind, and energy storage will help my site minimize energy costs or sustain a grid outage? (For PR, supports solar plus storage only for now, not wind)	User manual and demo video online	https://reopt.nrel.gov/tool
ResStock	Which energy efficiency measures are likely to yield the highest savings in my jurisdiction?	Documentation, publications and webinar available online	https://resstock.nrel.gov/
System Advisor Model (SAM)	What are the costs, cash flow, and performance predictions for my solar, wind, or geothermal project?	Quick start guide and extensive help menu within software; webinars online	https://sam.nrel.gov/about

NREL Tools – used for in-house analysis

Tool	Description	URL
Hawaii Energy Visualization Initiative (HEVI) tool	A custom capacity and dispatch modeling system that can quickly provide insights on cross-sectoral questions. This tool is customized in partnership with the user (typically an energy office or university) and NREL based on locally available data and information.	https://www.energy.gov/eere/energy-modeling-tool
Flexible Energy Scheduling Tool for Integrating Variable Generation (FESTIV)	A multiple-timescale, interconnected simulation tool that includes security-constrained unit commitment, security-constrained economic dispatch, and automatic generation control sub-models. FESTIV simulates the behavior of the electric power system to help researchers understand the impacts of variability and uncertainty on power system operations.	https://www.nrel.gov/grid/festiv-model.html
Multi-Area Frequency Response Integration Tool (MAFRIT)	The only software tool of its kind that integrates primary frequency response (turbine governor control) with secondary frequency response (automatic generation control). MAFRIT simulates the power system dynamic response in full time spectrum with variable time steps from milliseconds to days under both normal and event conditions. MAFRIT places emphasis on electric power systems with high penetrations of renewable generation.	https://www.nrel.gov/grid/modeling-tools.html